



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Adress: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,457	04/19/2004	Shinji Mackawa	0553-408	2984
7590		07/23/2008		
COOK, ALEX, McFARRON, MANZO, CUMMINGS & MEHLER, LTD. SUITE 2850 200 WEST ADAMS STREET CHICAGO, IL 60606			EXAMINER	
			PADGETT, MARIANNE L.	
			ART UNIT	PAPER NUMBER
			1792	
			MAIL DATE	DELIVERY MODE
			07/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/827,457	<b>Applicant(s)</b> MAEKAWA ET AL.
	<b>Examiner</b> MARIANNE L. PADGETT	<b>Art Unit</b> 1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 24 April 2008.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7,16-18 and 23-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7,16-18 and 23-30 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/1449)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

Art Unit: 1792

1. The examiner notes that all applicants' independent claims 1-2, 23 & 26, have been amended to require "which are integrated" with respect to first & second nozzles, for plasma & liquid drop application, respectively, and that this language can be found describing figure 1, means 102 & 103 on page 7, line 1-6; page 8, line 6-8; and in figure 2, which illustrates the same configuration for means 202 & 203, with "integrated" being described on page 9, lines 3-9. Therefore, this terminology, in light of the specification, appears to mean that the plasma & liquid drop nozzles that are "integrated" are in the same dispenser head, or are so combined, such that one moved, so is the other to a closely adjacent position.

That none of the applied art in section 5-7 of the action mailed 1/25/2008 taught or suggested such a configuration, alone or in combination, thus overcoming the previously applied prior art with respect to this requirement. With respect to the obviousness double rejections (ODP) in sections 9-10, the claims of PN 7,226,819, SN11/025,921(note corrected SN), 11/749,804 & 10/575,492 do not employ an integrated dual nozzle system, as is now claimed in all of applicants claims, thus overcoming these of the ODP rejections.

3. **Claims 1-7, 16-18 & 23-28** are rejected under 35 U.S.C. **112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 1-7, 16-18 & 23-28** are rejected under 35 U.S.C. **112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In the amendments made to all independent claims, the phrasing "**moving... nozzle... to a selected position of the... film**" (emphasis added) appears to literally mean that the nozzle is **on or in contact with** the film in order to be positioned as claimed. However, this would appear to be inconsistent with the

ability "a drop", since if they liquid dispensing nozzle was in contact with the surface, capillary action & scene there from would make drop formation improbable. Similarly, it would be difficult for the claimed plasma "from the first nozzle" such a position. Therefore, the limitations of the claim as amended are not self consistent & it is doubtful that the literal meaning was the intent.

Furthermore, the original specification does not appear to support a the literal meaning of the amendment be, but again referring to the illustrations of figures 1 & 2, discussed on pages 7-9, it can be seen disclosure is directed to the plasma & liquid nozzles being positioned above the select position of the film, hence the literal meaning of the amended limitation would appear to be New Matter.

Clarification of claimed language consistent with probable intent & the disclosure is recommended.

Also, in light of applicants' arguments & confusion in the specification as discussed below in sections 4 & 5, the clarity of what is meant by a liquid-repellent for a liquid admitted in the claims is uncertain.

4. The **disclosure is objected** to because of the following informalities:

on page 7 of applicants' response, on the first page of their remarks, applicants have provided arguments, which effectively assert that a liquid having a contact angle the surface of  $10^\circ \leq \Theta < 180^\circ$  is repellent to that surface, with a recitation of support this assertion found on page 4, lines 8-10, defining liquid-repellence by this value relationship, however as it is well documented that liquid, as exemplified by water contact angles of  $\leq 70^\circ$  or  $\leq 50^\circ$  is attracted (i.e. hydrophilic) with respect to surfaces, thus it is unclear in applicants' specification given this definition what is actually meant by repellent or attraction, i.e. are we to consider known hydrophilic & superhydrophilic surfaces to be repellent? It is noted that on page 2, line 15-20, affinity for a liquid is described as the drop largely expands on the surface for which it has affinity, hence as this will occur at contact angles significantly greater than just under  $10^\circ$ , the applicants' specification is clearly inconsistent. It is further unclear how less than  $1^\circ$  difference in contact angle

can create attraction or repellence. While very high degrees of affinity may sufficiently differentiate from lower degrees of affinity to perform applicant's process, that does not make a lower affinity surface on which a liquid drop spreads or expands, repellent for that liquid, such that applicant specification may be considered to create a fair amount of confusion as to the what their process is actually doing.

For instance, has the specification redefined what is considered to be attraction & repellence according to the contact angle relationship on page 4 (and so that no one else will understand what meant), or should the specification be considered to be directed to achieving repellence at contact angles which are normally attractive to the liquid was such a measured value? For the latter option, it is unclear & insufficiently enabled to determine how to accomplish this feat. Note the confusion must be considered to effect clarity of meaning in the claims.

Appropriate correction is required.

5. **Claim 7** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter and, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

It remains unclear how applicants are able to repel liquid, such water, at contact angles of 10° (etc...), when everyone else obtains hydrophilic, i.e. spreading or water attracting effects of water, at this contact angle.

As previously discussed, Claims 7, depended from claim 1, is directed by definition (applicants or other peoples) to a surface having a liquid affinity (irradiated portions) for contact angles with the liquid of less than 10°, where liquid repellent portions are claimed to be all angles of 10° up to 180°, however since this is inclusive of angles which are considered to be associated with liquid affinity the, such as hydrophilicity, as exemplified by definitions in Mitchell (4,487,905: col. 1, lines 60-68; hydrophilic = contact angle  $\leq 80^\circ$  & hydrophobic = contact angle greater than 80°); Bish et al.

Art Unit: 1792

(4,421,809: col. 3, lines 51-55; hydrophilic = contact angle  $\leq 70^\circ$ ); Kato et al. (5,368,931: col. 5, lines 20-25; hydrophilic = contact angle with distilled water  $\leq 50^\circ$ ); Smith et al. (5,736,249: col. 3, lines 44-54; hydrophobic or semi hydrophobic  $\equiv 85\text{-}99^\circ$ ), it is unclear how applicants' specification enables a contact angle which is generally accepted to be associated with attraction or affinity, to cause repellents of what it is known in the prior art to be attracted to, i.e. it is unclear how applicants specification enables an liquid attractive surface to repel liquid that is attracted to it. Alternatively, the claim may be considered to be confusing in light of a specification with contradictory disclosures.

6.           Applicant's arguments filed 4/24/2008 & discussed above have been fully considered but they are not persuasive.

7.           Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8.           Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

Art Unit: 1792

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/  
Primary Examiner, Art Unit 1792

MLP/dictation software

7/21/2008